Brief Reflection on Prompting Technique Effectiveness for AI Teacher Assistant

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1 Introduction

This reflection examines the implementation and effectiveness of different prompting techniques in an AI Teacher Assistant system. The system employs three distinct approaches: ReAct prompting, Few-Shot prompting, and Zero-Shot prompting, each triggered by specific keywords for optimal performance in different educational scenarios.

2 Implementation Overview

The system was designed with the following architecture:

- **ReAct Prompting**: Activated by trigger words like "verify", used for real-time fact checking and verification tasks and real-time event fact like "current", "2024".
- **Few-Shot Prompting**: Triggered by words like "noisy", classroom employed for classroom monitoring and interaction scenarios
- **Zero-Shot Prompting**: Default approach for general tasks,

3 Effectiveness Analysis

3.1 ReAct Prompting for Real-Time Verification

The ReAct (Reasoning + Acting) approach proved highly effective for fact verification tasks:

- Successfully handled real-time information requests
- Demonstrated accurate fact-checking capabilities
- Outperformed Zero-Shot prompting for time-sensitive facts

3.2 Few-Shot Prompting for Classroom Interaction

The Few-Shot approach showed particular strengths in:

- Managing classroom monitoring scenarios
- Handling pedagogical question

3.3 Zero-Shot Prompting for General Tasks

While versatile, Zero-Shot prompting revealed limitations:

- Performed well for general knowledge tasks
- Failed to handle real-time information requests effectively
- Demonstrated dependence on base model capabilities

4 System Performance

The triggering mechanism using keywords ("verify", "noisy", "fact") proved robust:

- Correctly routed tasks to appropriate prompting methods
- Handled edge cases effectively
- Maintained consistent performance across different use cases